

What is claimed is:

1. A security system for a cargo container having a door comprising:
an electronic control unit operably communicable with a remote computer terminal and capable of performing at least one activity and monitoring at least one function;

a first software control program within the electronic control unit to monitor the activity and the function; and

a second software control program within the remote computer terminal capable of retrieving the activity and the function from the first software control program.

2. The security system as claimed in claim 1 further comprising a first voltage source to supply power to the electronic control unit.

3. The security system as claimed in claim 2 further comprising a second voltage source to supply power to the electronic control unit if the first voltage source is inadequate.

4. The system as claimed in claim 3 wherein the second voltage source is a battery.

5. The security system as claimed in claim 1 further comprising a protocol to facilitate communication between the electronic control unit and the remote computer terminal.

6. The security system as claimed in claim 5 wherein the protocol facilitates wireless communication between the electronic control unit and the remote computer terminal.

7. The security system as claimed in claim 1 wherein the electronic control unit includes a microcontroller, a nonvolatile memory, a real time clock, a radio frequency receiver, an analog to digital converter, a temperature sensor for measuring the temperature, a motor driver, and a serial communication port.

8. The security system as claimed in claim 7 wherein the electronic control unit includes a means to record a plurality of events in the nonvolatile memory.

9. The security system as claimed in claim 1 further comprising a lock operably coupled to the electronic control unit and disposed adjacent to the door in order to lock the door in a closed position, thereby defining a locked status.

10. The security system as claimed in claim 9 wherein the electronic control unit monitors the locked status.

11. The security system as claimed in claim 7 wherein the radio frequency receiver is capable of receiving a remote command.

12. A cargo security system as claimed in claim 7 wherein the real time clock is settable with a clock operably coupled to the remote terminal computer.

13. A cargo security system as claimed in claim 7 wherein the temperature creates an alarm condition.

14. A cargo security system as claimed in claim 7 wherein the electronic control unit receives a command from a keyfob device.

15. A method of monitoring and recording a condition of a cargo container having a lockable door using a cargo security system comprising:

- an electronic control unit capable of monitoring at least one function and creating an alarm condition;
- a sensor capable of measuring a parameter and being operably coupled to the electronic control unit; and
- a remote terminal computer capable of operably communicating with the electronic control unit,

the method comprising:

- disposing the electronic control unit within the cargo container;
- comparing the parameter with a table having parameter limits; and
- creating the alarm condition if the parameter does not comply with the parameter limits.

16. A method for controlling a cargo security system, the method comprising:

- providing an electronic control unit capable of performing at least one activity and monitoring at least one function, and having a software control program for controlling its activities;
- communicating with a remote computer terminal using a unique serial protocol;
- providing a program in said remote computer terminal using communication protocol to adjust security system settings; and

providing a battery backup to operate the security system if an external power source is not available.

17. The method as defined in claim 16 in which said software program in said remote computer terminal enables the monitoring of system status, the retrieving of logged events, and problem diagnosis.

18. A method as defined in claim 16, including the step of providing said electronic control unit with a microcontroller, nonvolatile memory, battery backed-up real time clock, RF receiver, analog to digital converter, temperature sensor, I/O lines, motor driver, and serial communication.

19. A method as defined in claim 18 in which an event log in nonvolatile memory is kept up to date by overwriting older events by new ones and continuously maintaining the last set number of events, based on memory size.

20. A method as defined in claim 18, in which the log event records in a nonvolatile memory have a different structure to save memory space and record more information.

21. A method as defined in claim 16, including the step of automatically converting a real time clock from GMT to local time, and automatically adjusting for daylight saving time.

22. A method as defined in claim 16, in which a supply voltage is selected to extend the operational time of the back up battery, the method further comprising:

measuring a main power source continuously to determine that it has enough power to supply the security system; and

forcing the system to use the main power source if available, even though the back up power source has a higher voltage.

23. A method as defined in claim 16, in which the back up battery is trickle charged from the main power source to prolong its uninterrupted operation, the method comprising:

measuring voltage of both batteries continuously;

connecting both batteries together and allowing the charging current to flow, if the main battery voltage is sufficiently higher;

protecting the charging circuit from overheating, by turning the charging current periodically on and off if there is a substantial voltage difference between both batteries.

24. A method as defined in claim 16, including the steps of measuring temperature and supply voltage; and

increasing a control pulse duration in response to low temperature or voltages.

25. A method as defined in claim 16, including the step of triggering an alarm condition in response to rapid temperature or voltage changes.

26. A method as defined in claim 6, including the steps of providing a security device latch, providing one of a short reverse pulse and a high impedance to stop security device latch movement at a desired position.

27. A method as defined in claim 16, including the step of locating the security system using GPS signal and cellular phone to send control signals.

28. A method as defined in claim 27 including the step of excepting a customer's input from an intelligent keypad for sending controlled signals to the security device and for bypassing a serial protocol.

29. A method as defined in claim 16, in which the access to the system is password protected including:

using a relatively low-level user password to read log, program keyfobs, and adjust configuration;

using a relatively high-level user password to additionally program firmware, and change passwords; and

using default user passwords with limited capability when serial memory fails.

30. A method as defined in claim 16, comprising the steps of using a license file containing pairs of security device serial numbers and associated low level user passwords.